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Law and the Circular Economy

A circular economy reuses waste products to minimise the loss of materials. This article analyses circular economy, and outlines potential research avenues. A distinction between sharing economies and circular economies is suggested, and English law's capacity to deal with waste in accordance with circular economic ideas is considered.

1. INTRODUCTION

Circular economies focus on minimum input and output costs, along with limiting disposal in favour of reuse and/or recycling of goods. The doctrinal structures of the English property law regime concerning ownership (specifically, the common-law concepts of relative title and possessory title) and abandonment treats waste products in a way theoretically responsive to and supportive of circular economy, by legally transforming waste into objects suitable for integration into circular economies at the margins of supply.

The next section outlines the circular economy, both in terms of its cross-disciplinary intellectual development and in terms of its current positive status within political and third-sector institutions and organisations. Section three provides a first detailed analysis of the possible implications of circular economic ideas for English law. Section four considers the importance of a suitable legal framework for the reintegration of waste into circular economies by demonstrating the impact of a combination of three principles of English personal property law. This will show the suitability of English doctrine as a framework for circular economic practices. Section five concludes.

2. THE CIRCULAR ECONOMY

Circular economy is strikingly straightforward and easy to understand. It is the opposite of linear economy, which functions on the basis of make, use, and dispose. Instead, it is a system of interconnected loops in the production, use, and recycling of goods. What is common to all descriptions of circular economies is the basic notion of maximising value and minimising waste by various means at the different stages of the creation-consumption process. This involves, inter alia, better use of raw materials, better product design, and more effective reuse and recycling of end-products. Reintegration processes are evident at all stages of the creation-consumption process. Thus products are designed so that they are more durable and when no longer usable can be easily recycled to avoid the generation of unusable waste. Manufacturing processes are altered so that waste that is produced at the manufacturing stage can be recycled (e.g. off-cuts of textiles being used to create further goods, rather than be disposed as trash). Waste at the end of its use-life is not exempt from this recycling (e.g. waste food to be used to generate energy through anaerobic digestion, rather than being sent to landfill).

Of course, the broader picture is much more complex, with the potential for diffuse practices and transactions interacting with various degrees of success in attaining circular economic targets. This article will examine some current practices and interactions to ascertain some of the potential legal issues that may arise. Prior to the legal analysis, it is necessary to set out in depth the concept and structure of circular economy.

The first point to note is one of nomenclature: there is no definition of circular economy, and one can easily talk of notions such as circular economic practices, circular economies, circular economic parties, circular transactions, and so on, in both discrete and

interrelated ways. Use of such terms will vary for stylistic rather than any formal reasons. This article will not follow a rigid taxonomy here; moreover, a rigid taxonomy would likely present an inappropriately static representation of systems, which as will be seen, are highly dynamic and fluid in shape. Whilst there may well be a need for a new nomenclature for participants and activities within a circular economy, this article will not be engaging in such a taxonomic process.

It is suggested though that the terms “seller” and “buyer” will be too restrictive, and will fail to capture a broader range of transactions that will be valuable within circular economies. Instead, the following terms will be used. The “initiator” is the party that introduces materials into the circular economy for the first time. This should not be taken as an absolute and exclusive category: “new” manufactured goods are likely to include even minute amounts of recycled material. The “receptor” is the party who receives goods from an initiator. There may well be multiple receptors from a single initiator, and receptors may be commercial entities for whom the aim is to dispose of the goods, either to another receptor for re-transmission, or to a receptor for the purpose of use (this may be a commercial or non-commercial party). At the end of the useful life-span of the goods, they will be disposed of; the party at this point in the chain thus acts as a “disposer”. The disposal of the goods leaves them open for “acquirers”: parties who obtain goods that have been disposed of. Through further transactions the goods will either be injected back into the circular economy (the acquirer acting as a receptor, or as initiator), or they will be disposed of as waste. These four character-types, initiator, receptor, disposer, acquirer, encompass the range of behaviours found in circular economic structures more accurately (and less rigidly) than terms such as “buyer” and “seller”.

What follows is an outline of the background to the modern concept of the circular economy, which itself precedes a more detailed analysis of recent developments. This provides the theoretical and ideological structure, as well as indicating certain practical applications and issues, which in turn raises questions about the legal implications.

2.1 ANTECEDENTS

The notion of a circular economy has academic antecedents across a broad range of disciplines. Stahel, an architect, has been instrumental for over thirty years in the field of sustainability. Much of his work concerns the capacity of circular economies to occur,¹ especially by means of closing up loops in current economic systems.² More recently, he has expanded on the notion and discussed performance economies in a special issue of *Nature*.³ At the heart of his analysis is the need to shift from ownership to use, and to consider use and performance as the dominant characteristics of goods within circular economies:

Circular-economy business models fall in two groups: those that foster reuse and extend service life through repair, remanufacture, upgrades and retrofits; and those that turn old goods into as-new resources by recycling the materials. People — of all ages and skills — are central to the model. Ownership gives way to stewardship; consumers become users and creators. The remanufacturing and repair of old goods,

¹ W. R. Stahel, “The Product-Life Factor” (1982), at <http://www.product-life.org/en/major-publications/the-product-life-factor>. [All URLs accessed November 22, 2017.]

² W. R. Stahel and G. Reday-Mulvey, *Jobs for Tomorrow: The Potential for Substituting Manpower for Energy* (1981).

³ W. R. Stahel, “The Circular Economy” at <https://www.nature.com/news/the-circular-economy-1.19594> (March 23, 2016).

buildings and infrastructure creates skilled jobs in local workshops. The experiences of workers from the past are instrumental.

...

A performance economy goes a step further by selling goods (or molecules) as services through rent, lease and share business models. The manufacturer retains ownership of the product and its embodied resources and thus carries the responsibility for the costs of risks and waste. In addition to design and reuse, the performance economy focuses on solutions instead of products, and makes its profits from sufficiency, such as waste prevention.⁴

For the purposes of this article, it will be taken that the performance economy will function as a performative element within circular economic processes. What should be remembered though is the important policy undergirding circular economies: the shift from ownership to use as dominant factors in dispositions and transactions involving goods.

In addition to Stahel, other scholars have contributed substantially to circular economic thought, covering issues such as the analogy between industrial and biological ecosystems,⁵ the impact of socio-economics,⁶ and the limitations and wastefulness of the reduce-reuse-recycle approach to waste and the need for greater intensity in cycling of products.⁷ At a symposium on 'Creativity within the Circular Economy' in 2016,⁸ Jules Hayward of the Ellen MacArthur Foundation noted that the current approach to circular economic thought is a synthesis of existing work,⁹ covering the performance economy (Stahel), cradle to cradle,¹⁰ natural capitalism,¹¹ industrial ecology and symbiosis,¹² and biomimicry.¹³

The idea of circular economy is thus a conglomeration of ideas from a wide range of disciplinary backgrounds. The important role of environmental protection as a driver for the various foundational works needs acknowledgement. However, the legal consequences of moves to circular economy, the questions that might arise dealing with new forms of relationships and new socio-economic practices, appear to have received only very limited consideration. This gap in the literature has continued despite a recent explosion of interest in the synthetic ideal of circular economic thought. This has become problematic in light of growing commercial interest in the opportunities afforded by circular economic practices.

⁴ <https://www.nature.com/news/the-circular-economy-1.19594> (March 23, 2016).

⁵ R. Frosch and N. Gallopoulos, "Strategies for Manufacturing" (1989) 261 *Scientific American* 94.

⁶ M. Fischer-Kowalski and W. Hüttler, "Society's metabolism: The intellectual history of materials flow analysis, part II: 1970-1998" (1998) 2 *Journal of Industrial Ecology* 107.

⁷ W. McDonough and M. Braungart, *Cradle to cradle: remaking the way we make things*, (2002), (London: Vintage Press, 2009).

⁸ The Westminster Law and Theory Lab, University of Westminster, 24 March 2016.

⁹ See generally <http://www.circulareconomy.com/circular-economy/schools-of-thought/>.

¹⁰ Above fn. 7.

¹¹ P. Hawkin, A. Lovins and L. H. Lovins, *Natural Capitalism: Creating the next industrial revolution*, (Boston: Little Brown & Co, 1999).

¹² M. R. Chertow, "Industrial Symbiosis: Literature and Taxonomy" (2000) 25 *Annual Review of Energy and the Environment* 313.

¹³ <https://biomimicry.org/>.

2.2 RECENT DEVELOPMENTS

Recently circular economy has been garnering support from think tanks,¹⁴ and perhaps most importantly, has obtained the considerable support of the Ellen MacArthur Foundation.¹⁵ The Ellen MacArthur Foundation has itself obtained significant interest group support,¹⁶ and has been able to produce a large volume of explanatory literature about the concept, and its application in the real world. In addition, circular economic thought has been taken up by domestic, regional and international governmental and institutional organs;¹⁷ the EU's Horizon 2020 Work Programme from 2018 to 2020 aims to fund projects concerning circular economy to the tune of €941 million.¹⁸ These efforts have also found considerable support from corporate interests,¹⁹ as well as charitable organisations.²⁰ Academic interest has also accelerated.²¹ These efforts often complement and refer to each other,²² and exemplify the importance to circular economic thought of the value of reintegrating waste back into the economy at any and all stages of creation-consumption processes.

Various different formulations of what circular economy means can be gleaned from the literature. At the Creativity within the Circular Economy symposium, Hayward suggested there were three principles at the heart of circular economic thought: (1) preservation and enhancement of natural capital; (2) optimisation of resource yields; and (3) fostering system effectiveness by revealing and designing out negative externalities.²³ That explanation, and this article, focuses on material objects. Intangible things, such as digital products, are not subject to the same sort of deterioration resulting from usage and can potentially exist forever. Unfortunately, detailed analysis is outside the scope of this article, but their importance has been acknowledged by the Ellen MacArthur Foundation.²⁴

¹⁴ F. Preston, "A Global Redesign? Shaping the Circular Economy", *Chatham House Briefing Paper* (March 1, 2012), at <https://www.chathamhouse.org/publications/papers/view/182376>.

¹⁵ Ellen MacArthur Foundation, *Towards the Circular Economy: Economic and business rationale for an accelerated transition*, (2013), at <http://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>.

¹⁶ <https://www.ellenmacarthurfoundation.org/about/partners>.

¹⁷ See e.g. Collaboration for a Circular Economy, Innovate UK, at <https://connect.innovateuk.org/web/collaborations-circular-economy/overview>; Department for Environment, Food and Rural Affairs, *UK response to European Commission consultation of member states on the circular economy*, (November 11, 2015), at <https://www.gov.uk/government/publications/circular-economy-and-waste-markets-uk-government-response-to-european-commission-consultations>; <https://www.epsrc.ac.uk/funding/calls/circulareconomy/> (December 2015).

¹⁸ http://europa.eu/rapid/press-release_MEMO-17-4123_en.htm (October 27, 2017).

¹⁹ See e.g. <http://www.coara.co.uk/definitive-guide-circular-economy-businesses/> (a commercial asset recycling business); <http://www.veolia.co.uk/circulareconomy> (a waste management business); G Hieminga, *Rethinking finance in a circular economy: Financial implications of circular business models* (May 2015) (at <http://www.ing.com/About-us/Ourstories/Features/Circular-economy-challenges-financial-business-models.htm>); Chartered Institute of Wastes Management, *The Circular Economy: what does it mean for the waste and resource management sector?*, (October 2014), at http://www.ciw-m-journal.co.uk/downloads/CIWM_Circular_Economy_Report-FULL_FINAL_Oct_2014.pdf.

²⁰ <http://www.wrap.org.uk/content/wrap-and-circular-economy>.

²¹ See e.g. Call for Papers for a special issue of the *Journal of Industrial Ecology* on "Exploring the Circular Economy": http://jie.yale.edu/jie-cfp-circular_econ; <https://www.ukela.org/circular-economy> (special interest group of the UK Environmental Law Association); <http://www.greatrecovery.org.uk/resources/what-is-the-great-recovery/>; <https://www.cranfield.ac.uk/courses/taught/technology-innovation-and-management-for-a-circular-economy>.

²² See e.g. DEFRA, above fn. 17, 8.

²³ Above fn. 8.

²⁴ Ellen MacArthur Foundation, *Intelligent Assets: Unlocking the circular economy potential*, (February 8, 2016), at <http://www.ellenmacarthurfoundation.org/publications>. The recent report on a new digital industrial

The charity Waste and Resources Action Programme ('WRAP') provides a useful overview of its perspective on circular economy: 'A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.'²⁵ They set out a number of benefits of circular economy: 'As well as creating new opportunities for growth, a more circular economy will: reduce waste; drive greater resource productivity; deliver a more competitive UK economy; position the UK to better address emerging resource security/scarcity issues in the future; help reduce the environmental impacts of our production and consumption in both the UK and abroad.'²⁶

WRAP exemplify the circular economy diagrammatically in the form of a circle, with the connecting sectors being: Design/manufacture → Retailer → Consumer/householder/local authorities → Re-use/repair/recycling → Recycling sector → Design/manufacture. This Ouroboros relationship is a continually connected circle, with no specified start or end point. This is of course a conceptual representation. One of the mentioned sectors, re-use/repair/recycling, is more of a stage for processes to be undertaken following use, whilst the others are sectors properly understood and will involve commercial actors. It could also be suggested that one of the sectors can reasonably be considered the starting point: Design/manufacture (at least in the framework used by WRAP). Things will have to at some stage be created from primary materials; whilst some component materials may well be recycled and thus should not be considered "new" this will not be the sole type. The idealistic situation will be that there is functionally no substantive injection of new materials constituting a definitive starting point, but this is of course unlikely to be the case at any point soon.²⁷

Furthermore, there will be multilateral interconnections between the different stages. Retailers may engage directly with the recycling sector, without transacting with the consumer sector, and consumers may become manufacturers.²⁸ Each connection from one stage to another is likely to be a delta, with each channel concerning a different aspect of the overall transaction: the transfer of title or property in the goods; the transfer of use-rights, or other authorizations; the transfer of obligations, to the transferor and to other parties who entered the circle at earlier stages (thus making the elements of the circular economy multidirectional). These transfers may or may not be interconnected, or operate in a parallel or serial process. This is conceptualized as "cascade" thinking by the Ellen MacArthur Foundation: 'the essence of value creation lies in the opportunity to extra additional value from products and materials by cascading them through other applications'. They give the example that going 'from tree to furnace' misses out the opportunity of cascading the value of the tree, through 'successive uses as timber and timber products before decay and eventual incineration.'²⁹ This article will examine this aspect through the lens of property's capturing mechanisms for goods at the edges of consumption. Cascades of use-value fall alongside cascades of other incidents of ownership and aspects of proprietary rights and interests, by virtue of the current dominant property regime. These cascades may fall in different

strategy (<http://industrialdigitalisation.org.uk/project/>) contains only the faintest of references to circular economy: *Made Smarter Review 2017*, at <http://industrialdigitalisation.org.uk/wp-content/uploads/2017/10/Made-Smarter-Review-Final-Report-2017.pdf> 45, 61, 85, 103, 166.

²⁵ <http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy>.

²⁶ *ibid.*

²⁷ See e.g. A. Zaman and S. Lehman, 'The Zero Waste Index: A Performance Measurement Tool for Waste Management Systems in a "Zero Waste City"' (2013) 50 *Journal of Cleaner Production* 123.

²⁸ The so-called "prosumer": see e.g. I. Brown and C. Marsden, 'Regulating Code: Towards Prosumer Law?' (February 25, 2013), available at <https://ssrn.com/abstract=2224263>.

²⁹ <https://www.ellenmacarthurfoundation.org/circular-economy/overview/characteristics>.

directions, at different speeds, and to different stages. One party may have a possessory right enabling them to use the goods, a previous party an access right to acquire the goods in the first place, a third party an interest in the exchange-value of the goods, and so on. The dynamism of the property regime's cascading is such that it reaches to the end of chains of transactions, to the points at which goods are on the edge of use-value.

However, the inevitable friction of movement through the circular economy will lead to unavoidable and un-reclaimable loss of materials. What waste is produced may not be subjected to successful reintegration, depending on what sector or transactional stage they inhabit or apply to. Such processes will vary dramatically according to the complexity of the objects concerned. There will necessarily be occasions where a potential reintegration fails and material is lost from a circular transaction. This article focuses closely on the possible treatment for such losses that English personal property law can provide, be it prophylactic or preventative.

There is thus a chaotic mix of variable events, processes, and relationships, all aiming to achieve a broad, laudable but unspecific goal. One of the consequences of this is perhaps unsurprising, if not necessarily effective: a regulatory turn by governmental organisations. It is suggested that such developments are more about lofty aims than concrete policies. One of the earliest instances of a regulatory turn to circular economy can be found in the Circular Economy Promotion Law of the People's Republic of China (promulgated August 2008; in force January 2009).³⁰ It defined a 'circular economy' as 'a generic term for the reducing, reusing and recycling activities conducted in the process of production, circulation and consumption.'³¹ This will 'be propelled by the government, led by the market, effected by enterprises and participated in by the public',³² as illustrated by the preference for circular business practices in public procurement,³³ and provisions obliging producers to recycle certain named products even if the material is 'deserted' (abandoned).³⁴ Although this Law is 'largely exhortatory and contains few enforceable provisions',³⁵ and is unlikely to affect the significant role of informal waste collection without corresponding effective social change,³⁶ the focus on controlling waste is important.

A heavy focus on waste is also found in the EU's circular economy strategy,³⁷ which is probably a reflection of the rather tortured history of waste management in the EU.³⁸ The EU's Action Plan aimed to 'close the loop', and reduce waste sent to landfill,³⁹ but not without reference to the need to engage producers to design and manufacture in circle-

³⁰ For a translation, see e.g. <http://www.lawinfochina.com/display.aspx?id=7025&lib=law>. See also G. Chen and B. F. C. Hsu, "Law and Policy in the Sustainability of Affordable Housing: The Case of China" (2012-13) 30 *U.C.L.A. Pacific Basin Law Journal* 259, 284-286.

³¹ Circular Economy Promotion Law, Article 2.

³² *ibid.*, Article 3.

³³ *ibid.*, Article 47.

³⁴ *ibid.*, Article 15.

³⁵ E. Ryan, "The Elaborate Paper Tiger: Environmental Enforcement and the Rule of Law in China" (2014) 24 *Duke Environmental Law and Policy Forum* 183, 189-190.

³⁶ R. Linzer and S. Salhofer, "Municipal solid waste recycling and the significance of informal sector in urban China" (2014) 32 *Waste Management and Research* 896; B. Gillin, "Keeping Up with Chinese Consumerism: Offsetting China's Individually Generated Garbage with Regulatory and Social Mechanisms" (2011-12) 13 *Vermont Journal of Environmental Law* 69.

³⁷ http://ec.europa.eu/environment/circular-economy/index_en.htm.

³⁸ See e.g. D. Moore, "Commission Pledges Tough Circular Economy Package Enforcement" (April 6, 2016), at <http://www.ciwm-journal.co.uk/commission-pledges-tough-enforcement-circular-economy-package/>.

³⁹ EC, *Closing the loop - An EU action plan for the Circular Economy* (COM (2015) 614). See further e.g. Y. M. Gordeeva, "Recent Developments in EU Environmental Policy and Legislation" (2016) 13 *Journal of European Environmental & Planning Law* 120, 120-121.

appropriate ways.⁴⁰ Two years later, at the start of 2017, the Commission released a report on the implementation of the Action Plan.⁴¹ This report identified a number of areas where legislative proposals had been made, covering a wide range of activities involving primary resources, waste-reuse and recycling, through to financing circular economic practices.⁴² Many of the proposals are of considerable socio-economic and techno-environmental benefit, and if implemented effectively will be valuable in the move towards circular economy. However, some of the proposals are questionable: the argument that improving guarantees for consumers in online sales of goods will improve the quality of goods and thus prevent ‘products from being thrown away’ raises questions as to whether the enhancement of a remedy of repair is necessary.⁴³ That such proposals for consumer transactions will do little if anything for non-consumer sales, or that consumer practices towards wasting and transacting in second-hand goods appear quite contradictory and not like those assumptions at the heart of the Action Plan,⁴⁴ appear almost irrelevant. The Plan also tends towards assuming that commerce and consumption exists solely within the EU’s boundaries, and is solely undertaken by participants within the EU, somewhat problematic in light of the irrelevance of jurisdiction to circular economic thinking.⁴⁵ There are also the inevitably complex questions raised by Brexit about the continuing relevance of the EU’s approach in the UK. Given this article’s focus on the implications for English rather than EU law, and acknowledging the inevitable repatriation of environmental policy post-Brexit, specific analysis of the EU’s Action Plan will not be undertaken herein.

The UK’s response to the EU’s 2015 Action Plan, through the Department of Environment, Food and Rural Affairs (DEFRA),⁴⁶ was favourable to the circular economic concept, though subject to a light-touch regulatory approach. The aims included a reduction in obligations to reuse/recycle waste for SMEs and other such groups,⁴⁷ as well as increasing data capture, usage and sharing across the single market (for design and waste aspects) to more effectively create and maintain circular business.⁴⁸ The potential contribution of public procurement was also recognised.⁴⁹ Whilst DEFRA made very brief reference to ‘support[ing] trade in second hand products’,⁵⁰ it appeared content to refer to work undertaken by Hieminga’s report for the ING banking group as to issues concerning property and ownership in circular economic practice,⁵¹ discussed below.

⁴⁰ EC, *Closing the loop - An EU action plan for the Circular Economy: Annex I* (COM (2015) 614) (listing the various ways in which the EU plans to achieve its aims).

⁴¹ EC, *Report from the Commission ... on the implementation of the Circular Economy Action Plan* (COM (2017) 33 final).

⁴² See e.g. C Backes, *Law for a Circular Economy*, (The Hague: Eleven International Publishing 2017), available at https://www.uu.nl/sites/default/files/rgl-ucowsl-backes-law_for_a_circular_economy.pdf, and discussed in detail below (text following fn. 64).

⁴³ *Ibid.*, 3.

⁴⁴ See e.g. M. O’Brien, *A Crisis of Waste? Understanding the Rubbish Society* (Abingdon: Routledge 2007); N. Gregson and L. Crewe, *Second Hand Cultures* (Oxford: Berg 2003); W. Rathje and C. Murphy, *Rubbish! The Archaeology of Garbage* (Tucson: The University of Arizona Press, [1992] 2001).

⁴⁵ See text following fn. 58.

⁴⁶ <https://www.gov.uk/government/publications/circular-economy-and-waste-markets-uk-government-response-to-european-commission-consultations>.

⁴⁷ DEFRA, above fn. 17, 3.

⁴⁸ DEFRA, *UK response to European Commission consultation of member states on the circular economy* (October 2015), at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/475862/circular-economy-eu-consult-uk-response.pdf.

⁴⁹ DEFRA, above fn. 17, 2-3. This de-regulatory approach also appears to be taken in the Netherlands: Backes, above fn. 42, 20.

⁵⁰ *ibid.*, 16.

⁵¹ DEFRA, above fn. 48, 8.

At the time of writing (Autumn 2017), the consequences of Brexit for this issue are unclear. There does not appear to have been a response to the 2017 Report from the UK government. The very recent Clean Growth Strategy published by the Department for Business, Energy and Industrial Strategy only refers to circular economy in passing, and with no mention of the EU.⁵² More specifically, Backes has noted that EU regulation for recycling construction and demolition wastes ‘will [for the UK] obviously become less relevant’,⁵³ but he does not go into further detail (unsurprisingly so, given his focus), other than to note that increasing EU targets will for the UK, along with the Netherlands, Belgium and Germany, be ‘at best, irrelevant’ due to already superior recycling rates.⁵⁴ This directs us to a possible analysis of Brexit here: it may not make much of a difference in light of current commercial practices vis-à-vis waste. Brexit may however provide the opportunity for backsliding in the UK: without formal EU regulatory frameworks, then such recycling rates that currently occur (across all sectors, not just construction and demolition) may fall. However, there may be retention of current EU law (either completely or with very minor changes), or it may be that even in the event of substantial alteration or complete overhaul of the current regulatory framework, the fact that current commercial practices may be in excess of current legal requirements (at least in some areas, though admittedly this is not the case in all) might indicate that there would be little commercial justification for any backsliding regardless of the opportunities presented. Indeed, continuation of the EU framework post-Brexit may well have commercial viability in terms of potentially allowing for continuing cross-border (ie UK-EU27) trade and dealings in waste. Naturally these two directions are the extremes; the possibility of some middle ground being reached could also be contemplated. Unfortunately, the lack of clarity in terms of the current exit negotiations, and the unpredictability of future agreements at this stage, prevents anything other than the most speculative ambiguity at this point. Predicting such an outcome is beyond the scope of this article though.

Returning to the broader issues, it is suggested that the content of the regulatory turns seen at national and regional level, along with increased commercial interest, reveals a duality at the heart of circular economic thought: on one hand it is presented as an opportunity for dealing with production and waste in a more efficient manner in terms of environmental costs; on the other hand it is presented as being a commercially-focused ideology enabling profit opportunities to be developed in an integrated and interconnected world of high-technology enabling efficient diffusion of ownership and use rights between relevant parties in chains of transactions. It is this latter aspect which is of greatest interest. For all of the claims and targets on improving recycling rates and helping consumers to avoid wasting (disregarding the actual evidence on such matters), circular economic thought is far more profound: it will involve ‘nothing short of a wholesale transformation of the basis of contemporary capitalism and consumption’.⁵⁵

Surprisingly, there has not been much substantive legal analysis even following the regulatory turn.⁵⁶ This becomes problematic when the size and complexity of circular

⁵² Department of Business, Energy and Industrial Strategy, *The Clean Growth Strategy: Leading the way to a low carbon future* (October 2017), at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/651916/BEIS_The_Clean_Growth_online_12.10.17.pdf, 105 n 273; 135 (noting that DEFRA is working with the OECD on circular economy, to report at the end of 2018).

⁵³ Backes, above fn. 42, 48 n 76.

⁵⁴ Backes, above fn. 42, 48.

⁵⁵ Gregson et. al., above fn. 58, 224, citing B. Su, A. Heshmati, Y. Geng, & X. Yu, “A review of the circular economy in China: Moving from rhetoric to implementation” (2013) 42 *Journal of Cleaner Production* 215, 217.

⁵⁶ Some rare examples are C. Dalhammar, “The Application of “Life Cycle Thinking” in European Environmental Law: Theory and Practice” (2015) 12 *Journal of European Environmental & Planning Law* 97;

economies necessitates an immense regulatory effort,⁵⁷ let alone the transformation of contemporary commerce it entails. This aspect has recently been subject to powerful criticism by Gregson, Crang, Fuller and Holmes.⁵⁸ They argue that the EU's approach fails to account for the global context and remains bloc-centred. This containment strategy rests on a normative perception of global waste recovery networks as dirty, illegal trades in waste: circular economies are 'distinctly moral economies in which there are right and wrong ways to achieve resource recovery, even within the EU's boundaries'.⁵⁹ The EU-centric approach focuses on industrial symbiosis and extended product life, 'both producer-led' concepts, which write out global waste recovery networks,⁶⁰ and sets up 'a form of mercantilism' in the hope of creating 'geo-political insurance ... against the EU's increasingly apparent resource insecurity'.⁶¹ Researchers across different disciplines have questioned the underlying moral superiority of circular economic thought as restricting 'critical consideration' in this context,⁶² This critique is effective and, even in light of the 2017 Report, remains broadly accurate. Something Gregson et al did not cover was the potential legal issues arising.⁶³ Yet, engaging with the legal issues results in potentially unexpected possibilities. As will be seen, the English property regime fits reasonably well with the allegedly transformative circular economy ideal. Therefore, will transition to circular economies really be 'politically contested'?⁶⁴

The political contests concerning moves to a circular economy, along with analysis of some of the legal aspects of such a shift, have recently been considered in an inaugural lecture by Chris Backes of Utrecht University.⁶⁵ He considered circular economy through the lens of Dutch environmental law (and thus by necessity also through an EU lens), and paid specific attention to a number of issues not covered here (for reasons of economy); it is worthwhile though briefly outlining what appears (so far) to be one of the first English language legal examinations of circular economy.⁶⁶ Backes concentrated on whether circular

T. J. de Römph, 'Terminological Challenges to the Incorporation of Landfill Mining in EU Waste Law in View of the Circular Economy' (2016) 25 *European Energy and Environmental Law Review* 106; K. Steenmans, J. Marriott and R. Malcolm, 'Commodification of Waste: Legal and Theoretical Approaches to Industrial Symbiosis as part of a Circular Economy' (June 9, 2017) Working paper presented at the SMART conference 'Life-cycle based management and reporting for sustainable business', November 29-30, 2016; University of Oslo Faculty of Law Legal Studies Research Paper Series No 2017-26; available at <https://ssrn.com/abstract=2983631>. It appears that there is a forthcoming collection of essays on this broad topic: E. Maitre-Ekern, C. Dalhammar and H. C. Bugge (eds), *Preventing Environmental Damage from Products: An Analysis of the Policy and Regulatory Framework in Europe* (Cambridge: CUP, forthcoming 2018).

⁵⁷ F. Bonciu, "The European Economy: From a Linear to a Circular Economy" (2014) 14 *Romanian Journal of European Affairs* 78, 86.

⁵⁸ N. Gregson, M. Crang, S. Fuller & H. Holmes, "Interrogating the circular economy: the moral economy of resources recovery in the EU" (2015) 44 *Economy and Society* 218.

⁵⁹ *ibid.*, 227.

⁶⁰ *ibid.*, 221. See further e.g. A. McKenna, "Computer Waste: A Forgotten and Hidden Side to the Global Information Society" (2007) 9 *Environmental Law Review* 116; L. K. Breggin and J. Pendergrass, "Addressing Nanotechnology Waste and Product Disposal: Can the Superfund Safety Net Catch Tiny Particles?" (2007) 19 *Journal of Environmental Law* 323. This is in contrast to claims that waste law might exist to 'stimulate and guarantee a high level of circular use of materials': Backes, above fn. 42, 26.

⁶¹ Gregson et. al., above fn. 58, 236.

⁶² T. Ferrando, "Impolite Conversations around the "War on Waste"" *Critical Legal Thinking: Law and the Political*, April 8, 2016, at <http://criticallegalthinking.com/2016/04/08/impolite-conversations-around-war-waste/>; Gregson et. al., above fn. 58.

⁶³ They are not lawyers, so no criticism at all is intended here.

⁶⁴ *ibid.*, 225 (nb referring to EU, rather than the UK, in terms of this contestation, but the underlying issue remains the same).

⁶⁵ Backes, above fn. 42.

⁶⁶ In the course of his lecture Backes appears to refer to a small number of Dutch analyses of circular economy, covering implications for competition law (A. Gerbrandy, "Circulaire economie en de grondslagen van het

economy will lead to the elimination of waste law, on the grounds circular economy will not produce waste – at least, as far as waste is currently defined in the EU framework. He suggests a shift in mentality will be required to deal with the transformation of waste from rubbish to commercial products. Additionally he examines the extent to which regulatory frameworks will need to be altered in order to provide a more flexible and responsive legal environment for development and implementation of innovation vis-à-vis circular economy priorities (such as the need to effectively respond to new technologies which might actually infringe current prohibitions on dealing with waste). Linking in with this is his argument that changes may be required to public procurement rules and practices, both as a way of fostering innovation and as a way of embedding circular economy per se. Altogether Backes set out an ambitious set of issues that need addressing, as well as providing some interesting reform suggestions to move towards legislative realisation of circular economy. Backes' focus on EU law issues does however result in a substantial gap, concerning English law, which this article aims to fill. Prior to that task, it is worth making some brief critical points about Backes' argument.

At the outset, he claims 'one thing is clear: we have to change our habits and our way of working, consuming and living'.⁶⁷ Two points can be made here: (i) there are problems with a simplistic charge against consumption practices, and (ii) if there is to be change, who exactly will benefit? As to (i), contrary to common perceptions, ordinary people's consumption practices are neither particularly wasteful compare to previous generations, nor are they indicative of a negative culture of overconsumption. Quite simply, there may not actually be a waste crisis.⁶⁸ As to (ii), it is suggested that the changes (or shifts) to circular economy may best be described as really benefiting corporate commercial interests; environmental and consumer benefits may be limited and inadvertent at best. It is recognised that Backes made his point in the context of a need to reduce use of primary resources, and in that context his argument has strength.⁶⁹ In terms of his analysis regarding innovation, he provides much food for thought. However, it should be noted that innovation can come in many guises. It may be that innovate may occur in situations outside of regulatory frameworks of the sort Backes analyses, such as in commercial structures. This is the case in terms of the alterations to ownership and use structures considered in depth below. Furthermore, it must also be noted that current institutional frameworks (of legal doctrine and/or commercial practice) may suffice for those non-innovative methods currently used and likely to be continually used in addition to any novel or radical methods, systems and practices that technological and other developments may lead to. Thus how circular economy fits within current institutional frameworks and commercial practices remains a valid topic for analysis. Thus whilst Backes is correct in saying that the 'legal framework is only one element needed to foster innovation',⁷⁰ such a statement does not tell the full story.

In the following section a variety of potential legal implications will be considered. These will provide something more specific than what has been provided by the various regulatory efforts noted above, but many will remain in this article merely as pointers for further research. What will first be considered is the relationship between sharing economies and circular economies. It will be shown that the most appropriate way forward is to acknowledge the subsidiary nature of sharing economies: they are neither necessary nor

mededingings-recht", in *Verenging voor milieurecht, Met recht naar en circulaire economie* (VMR 2017/1, Boom juridisch, Den Haag 2017), cited at Backes, above fn. 42, 16 n. 19) and waste law generally (ibid, at 27 n. 36) (CCC). Not having Dutch, I am unable to consider these sources.

⁶⁷ Backes, above fn. 42, 10.

⁶⁸ See e.g. O'Brien, above fn. 44.

⁶⁹ Cf. Backes, above fn. 42, 13-16.

⁷⁰ Backes, above fn. 42, 32.

sufficient, but they are not exclusive to circular economic structures. Some features are common to both systems, and the (more extensive) literature on sharing economy indicates a number of potential problems that might afflict circular economies. The second sub-section will consider the implications of treatments of ownership and use, with a specific focus on the extent legal regimes for the treatment of waste might need reform or refocusing to deal with waste in circular economies.

3. LEGAL IMPLICATIONS OF CIRCULAR ECONOMY

The specific legal implications of circular economy have been subjected to very limited analysis. This sub-section addresses this lacuna by indicating a number of areas of private law where there may be potential for rupture or renovation when applied to circular economies.⁷¹

With a circular economy requiring greater levels of cooperation at all stages in the creation-consumption process, there may be possible implications in terms of competition law,⁷² corporate law,⁷³ and public procurement.⁷⁴ As alluded to above,⁷⁵ the implications for intellectual property will likely be considerable. There will also be a clear need for considerable ingenuity in formulating appropriate regulatory frameworks for the manufacture of circular-economy appropriate products.⁷⁶ Transportation of goods might not need radical analysis, not least in light of the potential value of the Rotterdam rules and its concomitant transportation document regime,⁷⁷ but no doubt there will be aspects which will be problematic.

Long-term contractual relationships, a subject of much debate,⁷⁸ will need to be catered for. On one hand circular economies will require easy mechanisms to engage in long-term agreements with binding effect. This cannot simply arrive with the entry of participants in circular economies. Whatever practices circular economy actors are currently doing are likely to be inappropriate in the context of increasing commercial complexity, as compared to more formalised rules.⁷⁹ On the other hand, the capacity of legal systems to allow for relational contracting can be questioned. Similarly, claims as to the possible value of conceptualising long term connected contracts as networks, based on systems analysis theory, is also a

⁷¹ This is definitely not to say that public law would be irrelevant, and the privacy concerns alone with circular economic structures are likely to be immense.

⁷² Noted at e.g. DEFRA, above fn. 48, 10, 16.

⁷³ T. Clarke, "The Widening Scope of Directors' Duties: The Increasing Impact of Corporate Social and Environmental Responsibility" (2015-16) 39 *Seattle University Law Review* 531, 548; 578. See also B. Sjøfjell, 'Redefining Agency Theory to Internalize Environmental Product Externalities. A Tentative Proposal Based on Life-Cycle Thinking', in *Preventing Environmental Damage from Products: An Analysis of the Policy and Regulatory Framework in Europe*, eds. E. Maitre-Ekern, C. Dalhammar and H. C. Bugge (eds) (Cambridge: CUP, forthcoming 2018).

⁷⁴ See e.g. Backes, above fn. 42, 54-60.

⁷⁵ Above fn. 24.

⁷⁶ Bonciu, above fn. 57; Backes, above fn. 42.

⁷⁷ See e.g. E. Eftestøl-Wilhelmsson, "The Rotterdam Rules in a European multimodal context" (2016) 16 *Journal of Maritime Law* 274.

⁷⁸ The literature is too vast to be cited in full, but see e.g. S. Macaulay, "Non-contractual relations in business: a preliminary study" (1963) 28 *American Sociological Review* 55; H. Collins, *Regulating Contracts* (Oxford: OUP, 1999); S. Macaulay, "The Real and the Paper Deal: Empirical Pictures of Relationships, Complexity and the Urge for Transparent Simple Rules" (2003) 66 *M.L.R.* 44; R. Austen-Baker, "Comprehensive Contract Theory: a Four-Norm Model of Contract Relations" (2009) 25 *Journal of Contract Law* 216; C. Mitchell, *Contract Law and Contract Practice: Bridging the Gap between Legal Reasoning and Commercial Expectation* (Oxford: Hart Publishing, 2013).

⁷⁹ See e.g. L. Bernstein, "Merchant Law in a Modern Economy", in *Philosophical Foundations of Contract Law*, eds. G. Klass, G. Letsas and P. Saprai (Oxford: OUP, 2014) ch 13.

potential minefield.⁸⁰ It should also be recognised that these long-term relationships will also at various different stages involve consumers, either connecting with commercial operators or potentially other consumers. The implications for consumer protection in light of the shift towards controlling use, the core of circular economic thought, will also need to be worked out.⁸¹

There will no doubt of course be other areas of law that could be affected, to one degree or another, by circular economic practices and trends; others will no doubt provide more penetrating analyses. This article focuses on the relationship between the notions of sharing economy and circular economy, and the possible value to circular economy of English personal property rules. The sharing economy has been subject to a considerable volume of literature in recent years, and in its focus on use-values and the way forms of sharing can more effectively enable others to access and benefit from using assets bears some considerable similarity with the emphasis on use in circular economic thought. Nevertheless, it will be suggested that sharing economies are better understood as sub-sets of circular economies. Even so, the next sub-section will also draw out of the sharing economy literature some possible implications and issues for circular economics. Following will be an analysis of how waste could be conceptualised and dealt with using principles of English personal property law.

3.1 SHARING ECONOMIES AND CIRCULAR ECONOMIES

The potential of collaborative consumption and the sharing economy, which emphasises (paid-for) sharing and use,⁸² rather than individual ownership,⁸³ has so far attracted more interest from legal scholars than the broader concept of a circular economy. Why these things should be so is not entirely clear. It raises intriguing questions about the way in which legal scholarship relates to macro-economic issues, as well as issues such as urbanism.⁸⁴ One explanation for this might be that the sharing economy lends itself much more to legal scholars' tendency (for good or for bad) towards taxonomic debate. Another explanation might be that sharing as an act, and the specific actions in the sharing economy such as those exemplified by Airbnb or Uber, are more amenable to specific legal analysis than the broader and more complex notions of circular economy, and there also been considerable scholarship

⁸⁰ See e.g. D. Campbell, "Luhman without tears: complex economic regulation and the erosion of the market sphere" (2013) 33 L.S. 162.

⁸¹ The literature is vast, but Radin's critique is an excellent starting point: M. J. Radin, *Boilerplate: the Fine Print, Vanishing Rights, and the Rule of Law* (New Jersey: Princeton University Press, 2013).

⁸² R. Belk, "You are what you can access: sharing and collaborative consumption online" (2014) 67 *Journal of Business Research* 1595, 1597.

⁸³ See generally R. Botsman and R. Rogers, *What's Mine is Yours: The Rise of Collaborative Consumption* (Harper Collins, 2010); L. Gansky, *The Mesh: Why the Future of Business is Sharing* (London: Penguin, 2010); B. Buczynski, *Sharing is Good: How to Save Money, Time and Resources through Collaborative Consumption* (New Society Publishers, 2013); M. Möhlmann, "Collaborative consumption: determinants of satisfaction and the likelihood of using a sharing economy option again" (2015) 14 *Journal of Consumer Behaviour* 193.

⁸⁴ N. M. Davidon and J. J. Infranca, "The Sharing Economy as an Urban Phenomenon" (2016) 34 *Yale Law & Policy Review* 215.

on the regulatory implications of sharing.⁸⁵ Alternatively, it may just be that the sharing aspect reveals aspects of how relationships occur, a prime target for legal analysis.⁸⁶

There does not appear to be a consistent meaning underlying the sharing economy: it can involve aspects of co-production, co-distribution, and co-consumption, all aided by technological change (in particular digitalisation and reductions in logistical costs).⁸⁷ Certainly there will be similarity and overlap between the sharing economy and the circular economy: both concern more efficient (the term is used broadly) use of goods or services, and there is likely to be considerable legal debate over the nature, role, and regulation of services in the circular economy as much as there is in the context of the sharing economy.

Where the circular economy goes further though is by focusing not just on use, but more specifically long-term down-chain control of goods, in order to minimise or eradicate waste as a result of such products coming to the end of their use-life. The sharing economy is likely to be focused on the consumer sector of a circular economy, with potential connection to the retail or design/manufacture sectors. This is because sharing is an act of use, and non-use of goods will indicate (a) a failure of the sharing economy and inevitably (b) a disposition of such goods. Thus sharing economy thought provides only limited assistance in examining how to deal with waste products. The sharing economy is perhaps thus best considered a subset (neither necessary nor sufficient) of a circular economy.

Nevertheless, the problems adumbrated to by scholars from various legal disciplines should be a warning for circular economy enthusiasts. There could be questions of regulatory status, especially in the employment context. Issues concerning the identification of taxable assets or income, a problem with the Airbnb model of sharing housing spaces, may well cross-over into circular economies; trying to identify the appropriate target for asset taxation (should there be such type) would require hard policy choices to be made between the actual owner and the user in an economy where use dominates ownership. Goods may be sold via a sharing arrangement, between one seller and multiple sharers, or there may be a sale of a sharing right by a sharer. These situations might be susceptible to analysis utilising current doctrinal understanding of shared ownership rights. One issue likely requiring radical analyses will be the absence of a concept of estates for personal property. Being time-based interests in land, estates could provide a useful mechanism to structure various rights and interests over assets. Further analysis is clearly required as to the most appropriate way to structure use-rights over personal property within an economic system predicated on use rather than ownership.

Within the literature on the sharing economy, the circular economy is barely mentioned; most often it is absent.⁸⁸ Here though it is worth directly engaging with one

⁸⁵ K. Zale, “When Everything is Small: The Regulatory Challenge of Scale in the Sharing Economy” (2016) 53 *San Diego Law Review* 949; R. H. Brescia, “Regulating the Sharing Economy: New and Old Insights into an Oversight Regime for the Peer-to-Peer Economy” (2016) 95 *Nebraska Law Review* 87; S. R. Miller, “First Principles for Regulating the Sharing Economy” (2016) 53 *Harvard Journal on Legislation* 147; R. Dyal-Chand, “Regulating Sharing: The Sharing Economy as an Alternative Capitalist System” (2015) 90 *Tulane Law Review* 241.

⁸⁶ K. Zale, “Sharing Property” (2016) 87 *University of Colorado Law Review* 501; B. Morgan and D. Kuch, “Radical Transactionalism: Legal Consciousness, Diverse Economies, and the Sharing Economy” (2015) 42 *Journal of Law and Society* 556; M. Maese, “Rethinking Host and Guest Relations in the Advent of Airbnb and the Sharing Economy” (2015) 2 *Texas A. & M. Journal of Property Law* 481.

⁸⁷ O. Lobel, “The Law of the Platform” (2016) 101 *Minnesota Law Review* 87; C. Cauffman, “The Commission’s European Agenda for the Collaborative Economy - (Too) Platform and Service Provider Friendly?” (2016) 5 *Journal of European Consumer and Market Law* 235; J. Infranca, “Intermediary Institutions and the Sharing Economy” (2016) 90 *Tulane Law Review Online* 29.

⁸⁸ Cf EU Committee of the Regions, *The Local and Regional Dimension of the Sharing Economy*, (December 2015) [18]: “The debate on the circular economy and the Digital Single Market could be some of the areas

article on the sharing economy to illustrate some contrasting conclusions. Morgan and Kuch recently argued that ‘[r]ecognizing and stressing the diversity of both economic life and forms of law opens up an understanding of “radical transactionalism”, where legal building blocks of property and capital can be reimagined and reconfigured, and mono-chromatic visions of the sharing economy given fresh colour.’⁸⁹ For them, ‘explor[ing] concrete instances of community-based sustainability actions and sharing-economy initiatives in the contexts of the history and trajectory of particular local settings. ... [allows exploration of] the ways in which cultural narratives about legality constrain and/or enable social action.’⁹⁰ Their examination of the sharing economy, and the practices evident therein, indicated ‘experimentation with ownership and control’; the consequences of these experiments should not be ‘imbrication of law with financialization strategies’ but instead ‘*shared access to ownership*’.⁹¹

There is much in Morgan and Kuch’s work to commend it, not least in its conclusion that ‘[r]adical transactional lawyers’ are essential to shaping the regulatory shape and trajectory of sharing economies.⁹² One of the central difficulties recognised by circular economy advocates has been the need for effective regulation and governance in order to achieve their aims, and in this respect there is communality. However, this author cannot apply their analysis of sharing economies up to the circular economy. Neither can this author fully agree with the argument that moves to a circular economy will be contested.⁹³ As circular economies necessitate a strategy of (re)capturing goods for recirculation back into a commercial process, English personal property law provides the tools for circular economies to implement such a strategy, and it is likely (in light of the preference for use over ownership as governing factors) that there will not be sharing of ownership.

3.2 OWNERSHIP AND USE – THE CASE OF WASTE

The implications on circular economies of current property regimes are curiously absent from the literature, even though property regimes, and the ownership structures they produce, could be a substantial block in circular economies. The sole exception to this lacuna appears to be the report by Hieminga of the ING bank: *Rethinking finance in a circular economy: Financial implications of circular business models*. He suggested that ‘the legal and financial systems that support the current business environment may not be very conducive to the new setting that the circular economy requires.’⁹⁴ He argued for a shift from ownership to access and use as conceptual bases more conducive to circular economy.⁹⁵ This is in accordance with Stahel and the Ellen MacArthur Foundation, which had already argued for a shift from acquisition for consumption to acquisition for use, by means of a transformation of acquisitive transactions from transfers of ownership by sale to transfer of use rights by leases.⁹⁶ Yet, as Hieminga noted, this shift may pose problems for asset financing.⁹⁷ More

where the [sharing economy] should be taken into consideration.” This is the only mention of the circular economy in that document.

⁸⁹ Morgan and Kuch, above fn. 86, 586.

⁹⁰ *ibid.*

⁹¹ *ibid.*, 586-87.

⁹² *ibid.*, 587.

⁹³ Above fn. 64.

⁹⁴ Hieminga, above fn. 19, 35.

⁹⁵ *ibid.*, 6.

⁹⁶ Ellen MacArthur Foundation, above fn. 15, 7.

⁹⁷ Hieminga, above fn. 19, 39.

generally, shifting from ownership to leasing for Gregson et al requires ‘nothing short of a wholesale transformation of the basis of contemporary capitalism and consumption’.⁹⁸

This shift from ownership to use requires an “ownership-heavy” approach, with the weight of ownership resting on just one participant in the circular economy. Hieminga illustrates this with the example of how Van Scherpenzeel, a Dutch recycling company, owns the materials throughout the supply chain (from collection of waste until reused).⁹⁹ Underlying this approach though is an apparent preference for dealing with ownership and accession issues through contract.¹⁰⁰ Yet there are profound difficulties in simply resting property and ownership claims and rights on contract, and this is likely to increase in an era of new commercial and consumption practices. This has recently been demonstrated with the decisions of the Court of Appeal and Supreme Court on retention of title clauses, which has the general result that transactions on retention of title terms may not be sales, for the purposes of the Sale of Goods Act 1979.¹⁰¹ Instead, such agreements are a type of *sui generis* contract. Utilising such a doctrinal approach would be useful in the illustration above. The goods can be transacted with and transmitted around a circular economy whilst the title is retained by the initiating party in the transactions. This immediately focuses the parties attention as to the content of the contracts, which will set out the powers the parties have vis-à-vis the objects of the transactions. Directions and limitations as to the use of the goods will be issued by the initiator in this process, which will restrict or enforce the activity that the receptor can undertake.

Whilst Hieminga focused on acquisition, there are also problems at the other end of the spectrum, with waste: ‘the circular economy is based on the principle that waste does not exist and is a valuable resource in (perhaps another company’s) production. But the circular economy faces a lot of legal barriers that limit the use of waste as an input.’¹⁰² It will be shown that some of these problems concern the approach taken, at least in the EU, to waste. Another problem was alluded to by Dalhammar: ‘it is unreasonable to put the responsibility for collection and recycling on the producers, as is the case today. They have no ownership of the products when they become waste, as the consumers have possession of the products, and can therefore not guarantee that consumers turn them in for collection.’¹⁰³ In a footnote to that text, Dalhammar added: ‘Even in a case where producers would – in the legal sense – keep ownership over sold products, the actual control over the products would be difficult to ensure.’¹⁰⁴ Since it was suggested above that control would be possible, through utilisation of a contractual diffusion among parties of rights and obligations, it becomes necessary to examine further extent to which waste can be controlled. There is also a practical need for resolution of what might seem marginal questions about the edges of ownership. Empirical evidence suggests that a failure to provide a coherent and comprehensive ownership structure in the case of solid municipal waste can cause problems with the delineation between the rights of formal and informal participants in the waste reclamation process, and informal

⁹⁸ Gregson et. al., above fn. 58, 224, citing B. Su, A. Heshmati, Y. Geng, & X. Yu, “A review of the circular economy in China: Moving from rhetoric to implementation” (2013) 42 *Journal of Cleaner Production* 215, 217.

⁹⁹ Hieminga, above fn. 19, 32.

¹⁰⁰ *ibid.*, 39.

¹⁰¹ *Caterpillar (N.I.) Ltd. (formerly F. G. Wilson (Engineering) Ltd.) v John Holt & Co. (Liverpool) Ltd.* [2013] EWCA Civ 1232; [2014] 1 W.L.R. 2365; *PST Energy 7 Shipping LLC v O. W. Bunker Malta Ltd.* [2016] UKSC 23; [2016] A.C. 1034. See generally L. Gullifer, ““Sales” on retention of title terms: is the English law analysis broken?” (2017) 133 L.Q.R. 244.

¹⁰² Hieminga, above fn. 19, 35.

¹⁰³ Dalhammar, above fn. 57, 106-107.

¹⁰⁴ *ibid.*, fn. 31.

participants may be threatened by ‘circular economy industrial strategies’.¹⁰⁵ The importance of assessing the extent to which control will be maintained, and formalised relationships will prevail, is thus clear.

This status of waste and how it is dealt with in a circular economy thus needs exploration. However, the breadth of methods for managing waste and the imbrication of domestic, European and international legislative frameworks on waste, render the topic one of confusion and complexity.¹⁰⁶ The Waste Directive 2008 currently provides the basic regulatory framework,¹⁰⁷ yet no single definition of “waste” appears sufficient.¹⁰⁸ However, the Directive does define waste as ‘any substance or object which the holder discards or intends or is required to discard’,¹⁰⁹ waste holders as ‘the waste producer or the natural or legal person who is in possession of the waste’.¹¹⁰ This article will not examine exhaustively the definition of waste,¹¹¹ but will suggest that the important element of control is built into doctrine on waste. In the final analysis of the EU waste law regime, we can follow Scotford: any ‘clarity’ derived from the explicit setting out of priorities of waste is ‘complicated’ by qualifications of that prioritisation,¹¹² and the delegation of assessment of the ‘life-cycle’ to Member States ‘according to their own methodologies and understandings of this concept’.¹¹³ Shifting our focus to a different regime for waste can provide alternative ‘methodologies and understandings of [the life-cycle] concept’. English personal property law provides a framework which, though imperfect, does provide a workable structure for the reintegration of goods into the circular economy. This will be shown in the following section. The remainder of this sub-section sets up that discussion, by suggesting how global supply chains help generate a landscape onto which the tangible personal property framework can be placed to effectively deal with waste.

Whilst there is considerable scope for active corporate social responsibility in terms of managing and avoiding waste, various factors such as bounded rationality and ‘perverse incentives’ can restrict the likelihood of waste reduction.¹¹⁴ More generally we can

¹⁰⁵ J. Cavé, “Who owns urban waste? Appropriation conflicts in emerging countries” (2014) 32 *Waste Management & Research* 813, 820. Cavé was concerned with a very different socio-economic context, but the basic point about the dangers of an incomplete ownership regime remains applicable.

¹⁰⁶ D. Wilkinson, “Time to Discard the Concept of Waste?” (1999) 1 *Environmental Law Review* 172, 173-177; S. Tromans, “EC Waste Law—A Complete Mess?” (2001) 13 *Journal of Environmental Law* 133, 155; P. Street, “Trading in Pollution: Creating Markets for Carbon and Waste” (2007) 9 *Environmental Law Review* 260; J. Adshead, “The Waste Strategy for England 2007: Is It Deliverable?” (2008) 10 *Environmental Law Review* 46; Backes, above fn. 42, 23-29.

¹⁰⁷ Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives (OJ L312/3 2008).

¹⁰⁸ I. Cheyne and M. Purdue, “Fitting Definition to Purpose: The Search for a Satisfactory Definition of Waste” (1995) 7 *Journal of Environmental Law* 149, 149.

¹⁰⁹ Directive 2008/98/EC, Article 3(1).

¹¹⁰ *ibid.*, Article 3(2).

¹¹¹ See e.g. J. Fluck, “The Term “Waste” in EU Law” [1994] *European Environmental Law Rev.* 79; I. Cheyne, “The Definition of Waste in EC Law” (2002) 14 *Journal of Environmental Law* 61; D. Pocklington, “Opening Pandora’s Box - the EU Review of the Definition of “Waste”” [2003] *European Environmental Law Review* 205; E. Scotford, “Trash or Treasure: Policy Tensions in EC Waste Regulation” (2007) 19 *Journal of Environmental Law* 367; R. Lee and E. Stokes, “Rehabilitating the Definition of Waste: Is It Fully Recovered?” (2008) 8 *Yearbook of European Environmental Law* 162. See also House of Lords Science and Technology Committee, *Waste Reduction* (HL 2007-08, 163-I); <https://www.gov.uk/government/publications/legal-definition-of-waste-guidance/decide-if-a-material-is-waste-or-not>.

¹¹² E. Scotford, ‘The New Waste Directive - Trying to Do It All ... an Early Assessment’ (2009) 11 *Environmental Law Review* 75, 80, 85 (discussing Directive 2008/98/EC, Article 4(1), (2)).

¹¹³ *ibid.*, 81. See also E. Tueft-Opi, “Life after End of Life: The Replacement of End of Life Product Legislation by an European Integrated Product Policy in the EC” (2002) 14 *Journal of Environmental Law* 33.

¹¹⁴ C. Bradshaw, “The environmental business case and unenlightened shareholder value” (2013) 33 *L.S.* 141, 146-47. As to the deliberate manipulation of food supply chains to create waste, which itself is profitable: A. V.

acknowledge the necessity of movement in commercial activity; we devote considerable resources to ‘facilitating exchange in the complex economic world of impersonal exchange’.¹¹⁵ Commercial law is about transactions,¹¹⁶ with a particular focus on repetitive, standardized contractual market-transactions between merchants. Examination of modern global supply chains demonstrates how breakages and interruptions in larger supply chains are merely diversions, rather than blockages.¹¹⁷ Ruptures in modern global supply chains generate waste, which in turn can create fluid low value supply chains which re-consume the waste.¹¹⁸ These alternative supply chains are in a constant state of flux, an interconnected process of waste creation and reconsumption.¹¹⁹ This process commodifies waste and the products of waste (i.e. new goods), requiring hard bargains to be drawn to maximise very thin profit margins.¹²⁰ Bargains over highly disposable, and easily acquired, waste goods maintain ‘movement within the commodity chain’, and it is this momentum which is vital to ‘plug gaps’ in profit generation processes.¹²¹

The interconnections between economies and societies as to production and consumption shifts waste (of things and wasted usages of things),¹²² causing supply chains to alter shape and direction to follow that waste: low end commodity chains begin and end at places of waste,¹²³ and waste regenerates itself back into something suitable for consumption.¹²⁴ It is not hard to see the connection with, and benefit to, circular economies of such actions. What is more intriguing is the possibility that the underlying first principles of English personal property doctrine might work well with such process, at the chaotic end-stages of chains of consumption, to re-integrate things into the flow of commerce.

4. RELATIVITY OF TITLE, POSSESSORY TITLE, AND ABANDONMENT

English property law’s value here could be in acting as a bridge rather than a barrier for the acquisition of waste to be a means for (re-)integration of products back into circular economies. Within common law systems, relativity of title is the governing mechanism for determining “ownership”.¹²⁵ As Fox has argued, the principle of relativity of title applies to chattels, though to a lesser extent than it does to real property.¹²⁶ It exists because of rules of

Barnard, *Freegans: Diving in the wealth of food waste in America* (University of Minnesota Press, 2016) 34-38; 92-96; J. L. Midgley, “The Logics of Surplus Food Redistribution” (2014) 57 *Journal of Environmental Planning and Management* 1872; J. Parfitt, M. Barthel, and S. Macnaughton, “Food Waste Within Food Supply Chains: Quantification and Potential for Change to 2050” (2010) 365 *Philosophical Transactions of The Royal Society B* 3065.

¹¹⁵ D. C. North, *Understanding the Process of Economic Change* (Princeton: Princeton University Press, 2005) 91. See also M. Bridge, “The evolution of modern sales law” [1991] L.M.C.L.Q. 52.

¹¹⁶ R Goode, “The Codification of Commercial Law” (1988) 14 *Monash University Law Review* 135, 141.

¹¹⁷ A. Hulme, *On the Commodity Trail: The Journey of a Bargain Store Product from East to West* (London: Bloomsbury Academic, 2015).

¹¹⁸ Hulme, above fn. 117.

¹¹⁹ *ibid.*, 18-24.

¹²⁰ *ibid.*, 4 (outlining the logic of the bargain as being interconnected with hyper-modern capitalism).

¹²¹ *ibid.*, 126.

¹²² *ibid.*, xiv.

¹²³ *ibid.*, 2.

¹²⁴ *ibid.*, 126.

¹²⁵ D. Fox, “Relativity of Title at Law and in Equity” (2006) 65 C.L.J. 330, 330. See generally P. Birks, “The Roman Law Concept of Dominium and the Idea of Absolute Ownership” (1985) 7 *Acta Juridica* 1; L. Katz, “The Relativity of Title and *Causa Possessionis*” in *Philosophical Foundations of Property Law*, eds. J. Penner and H. Smith (Oxford: Hart Publishing, 2013) ch. 9; L. Katz, “The Concept of Ownership and the Relativity of Title” (2011) 2 *Jurisprudence* 191.

¹²⁶ Fox, above fn. 125, 330.

evidence and procedure, and it plays a vital role in resolving priority disputes:¹²⁷ ‘relativity of title is about the respective enforceability of competing claims to vindicate the incidents of enjoyment inherent in some particular proprietary interest.’¹²⁸ Various reasons can be given for relative title.¹²⁹ The presumption of a legal title based on possession is valuable in cases where proving a valid title in a chain of transactions is difficult, and relative title based on possession provides an effective way to deal with possessory disputes, without having to resort to distinct ownership questions.

As Fox put it: the finder’s title ‘arises as soon as he is in possession’.¹³⁰ This strikingly simply point was, surprisingly, not subjected to sustained analysis until Hickey’s enlightening examination *Possession and the Law of Finders*.¹³¹ Hickey convincingly demonstrated that possession is sufficient to generate a right which in turn is sufficiently strong enough to constitute a legal right.¹³² Possession in relative-title systems is key, and this can be seen in both ancient and modern case-law.¹³³

Following the Torts (Interferences with Goods) Act 1977, section 8, it is now possible to plead a superior title. This arguably provides English law with an ownership action similar to that found in civilian systems.¹³⁴ This shift would seem to suggest that finders may have a limited level of protection, particularly as against the first person to sue them,¹³⁵ and as such the capacity to reintegrate products back into economic use is restricted. This part of the procedural structure of English property law illustrates some linear tendencies, by introducing considerable obstacles in the way of acquiring goods; goods remain at the disposal of the original owner. Whilst the relativity of title enables control-powers to process down a chain of transactions, it remains the case that the true owner (or any relatively stronger party as against a relatively weaker party) can re-enter that chain, assert their relatively stronger claim, and reacquire the control-powers entailed by the relative strength of their claim.

Yet at the margins of consumption English law still provides a means by which finders have a right over found goods.¹³⁶ This is a precarious right,¹³⁷ but it exists by virtue of (a) the underlying conceptual principle of relative possessory title and (b) the procedural requirements of section 8.¹³⁸ This possessory interest fills the gap in the ownership continuum; it is this practical aspect which gives relative possessory title its social purpose. The law, and more importantly its subjects, does not have to retreat to abstract and

¹²⁷ *ibid.*, 337.

¹²⁸ *ibid.*, 334.

¹²⁹ *ibid.*, 338-340. These reasons are given in the context of real property, but they apply equally (indeed possibly with greater strength) in cases involving goods.

¹³⁰ *ibid.*, 340.

¹³¹ R. Hickey, *Property and the Law of Finders* (Oxford: Hart Publishing, 2010). This is not to say that the right accorded to possessors had not been so examined: F. Pollock and R. S. Wright, *An Essay on Possession in the Common Law* (London, 1888) is the classic text. Rather, Hickey was focusing on finders as a special sub-set of possessors; a group whose status in civil and criminal proceedings had been subjected to considerable contradictory treatment.

¹³² In doing so, Hickey provided a justification for this right which moved beyond the pleading point, and also beyond the mere “special right” which had been assumed as what finders had: Fox, above fn. 125, 341-342, 344. See also R. A. Epstein, “Possession as the Root of Title” (1979) 13 Ga L Rev 1221; C. Rose, “Possession as the Origin of Property” (1985) 52 *University of Chicago Law Review* 73.

¹³³ *Armory v Delamirie* (1722) 1 Strange 505; 93 E.R. 664; *Costello v Chief Constable of Derbyshire* [2001] EWCA Civ 381; [2001] 1 W.L.R. 1437.

¹³⁴ S. Green and J. Randall, *The Tort of Conversion* (Oxford: Hart Publishing, 2009) 90.

¹³⁵ *ibid.*, 89, describing this as “excessive protection” for the claimant.

¹³⁶ See e.g. Fox, above fn. 125, 341.

¹³⁷ Not least because if he is dispossessed, his rights are merely those of a personal right of action against the dispossessor: Fox, above fn. 125, 344-349.

¹³⁸ It is also likely to be obligatory to identify the superior title holder in such cases: Civil Procedure Rules 19.5A, noted in Green and Randall, above fn. 134, 89.

contestable claims of ownership. Proving relative possessory title is more likely if the goods are waste, which leads to the third limb in this area of law: abandonment.

There are substantial difficulties facing finders of abandoned goods, not just in determining the elements of abandonment, but even the possibility of an effective abandonment. First, the law itself is unclear, being a conglomeration of various cases of sometimes limited or very narrow authority, with considerable interaction between private and public (essentially criminal) law issues.¹³⁹ Second, the law lacks any coherent conceptual or principled basis, other than a highly unsatisfactory circular formula that abandonment is proven by actual abandonment combined with the intention to abandon.¹⁴⁰ However, the faint but otherwise real possibility of abandonment allows finders to demonstrate that their possession can generate a sufficient and relatively-strong-enough interest (or right) in things to prevent goods from existing in a practical legal vacuum.¹⁴¹ This conceptual triptych of (i) possession as root of title, (ii) relativity of title, and (iii) abandonment provides goods with a route back into the flow of commerce. Arguably, English law provides a capturing mechanism – a sort of conceptual net – for goods at the margins.¹⁴²

Fractures in the process of creation, use, disposition, acquisition and so on are inevitable; the result is waste. The circular economy will prevent or heal such fractures, through various different mechanisms. It is possible to conceptualise the possible mechanisms into a tripartite hierarchical framework: the first order method is by regulation; the second order method is by contract; the third order is by property. The EU's approach to circular economy, which broadly replicates that provided for dealings with waste generally, is to focus on providing a regulatory framework which will prevent the disposal of waste in non-use ways (e.g. landfill), as well as supporting targets for reuse and recycling, at the various stages of consumption. This first order method of regulation could well lead to an expansion of the contractual sphere as parties organise their operation within the governing regulatory framework. However, this is not the only way by which fractures can be resolved: the third order method looks to the underlying property regime, which provides a framework for acquiring goods that have for one reason or another escaped the primary and secondary capture-mechanisms of regulation and contract. The provision by English personal property law of a limited but otherwise operable capturing mechanism for marginalised waste is thus valuable to circular economics. It provides waste collection agencies and organisations with a foundation from which to operate. The possibility to become owners merely by acquiring possession provides a mechanism by which waste can be reintegrated into the economy. This can, to some extent, already be observed in food supply chains, where Midgley identifies 'lingering property rights and legal responsibilities' with surplus food.¹⁴³ These lingering rights blur the division between surplus and waste, with the effect that 'surplus food is seen as the outcome of food chain inefficiencies, however, the control of what food is defined as surplus remains with the food industry.'¹⁴⁴

¹³⁹ Cf. S. Thomas, "Do freegans commit theft?" (2010) 30 L.S. 98, 104-114.

¹⁴⁰ For further analysis of abandonment, see e.g. J. Strahilevitz, "The Right to Abandon" (2010) 158 *University of Pennsylvania Law Review* 355; E. M. Peñalver, "The Illusory Right to Abandon" (2010) 109 *Michigan Law Review* 191; R. Hickey, "The problem of divesting abandonment" [2016] Conv. 28. For what it is worth, this author prefers Strahilevitz's analysis.

¹⁴¹ This is very much in line with Strahilevitz, above fn. 140, 360.

¹⁴² Cf J. Lee and S. Garikipati, "Negotiating the Non-negotiable: British Foraging Law in Theory and Practice" (2011) 23 *Journal of Environmental Law* 415.

¹⁴³ Midgley, above fn. 114, 1873. See also C. Alexander and C. Smaje, "Surplus Retail Food Redistribution: An Analysis of a Third Sector Model" (2008) 52 *Resources, Conservation and Recycling* 1290; J. Christman, "Caring for Property: Comments on Susan Smith's "States, Markets and an Ethic of Care"" (2005) 24 *Political Geography* 21.

¹⁴⁴ Midgley, above fn. 114, 1888.

5. CONCLUSION

The relative absence of analysis of the legal implications of circular economic practices is troubling. This article has alluded to a number of potentially promising research avenues for specific issues. It has analysed the relationship between sharing and circular economies, and highlighted how circular economies can operate and function effectively within current legal frameworks.

Dealings with waste are hierarchical: the first order is regulatory, the second contractual, the third property. English property law can transform waste into material suitable for manipulation by first or second order methods.¹⁴⁵ The doctrinal triptych of relative title, possessory title and abandonment, provides a capturing mechanism for the potentially troublesome treatment of waste in circular economic practices. The regime closes up gaps, resolving ownership and use-claims in a way which produces the foundations for potential future commoditisation of the goods.

In circular economy there is a form of industrialized commodification manipulating the disposal of goods at the margins.¹⁴⁶ The stage of final consumption is simultaneously the stage of productive consumption: the “exit” of value from systems of exchange through their consumption and use by individuals is the immediate “entry” of value into systems of exchange as materials for the generation of goods and services.¹⁴⁷ English personal property law provides a strong foundation for circular economies, though whether this is a good thing is questionable.¹⁴⁸

¹⁴⁵ Cavé, above fn. 105, 818-819; M O’Brien, “Rubbish values: Reflections on the political economy of waste” (1999) 8 *Science as Culture* 269.

¹⁴⁶ J. Sbicca, “The Need to Feed: Urban Metabolic Struggles of Actually Existing Radical Projects” (2014) 40 *Critical Sociology* 817, 825.

¹⁴⁷ O’Brien, above fn. 145, 282.

¹⁴⁸ As Arnold has persuasively argued, there would be considerable benefit in adopting a “web of interests” understanding of property in terms of protecting environmental goods: see e.g. C. A. Arnold, “The Reconstitution of Property: Property as a Web of Interests” (2002) 26 *Harvard Environmental Law Review* 281; C. A. Arnold, “Sustainable Webs of Interests: Property in an Interconnected Environment”, in *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges*, eds. D. Grinlinton and P. Taylor (The Hague: Brill/Martinus Nijhoff, 2010) ch 8.